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ABSTRACT

The study involving 149 National Technical Institute for the Deaf summer orientation program students evaluated the use of the Career Maturity Inventory-Attitude Scale (CMI) with a deaf college student population. The original form of the test and an adapted version were used with two groups of students who were tested three times during a 2 1/2 year period. Results showed that the adapted version of the CMI is more feasible than the original form for use with a deaf population. A high correlation was found between language ability and mature career attitudes. A finding not anticipated was that students in the upper quartile changed their college majors more often than students in the lower quartile. Implications for the use of the instrument are discussed. (SB)

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A LONGITUDINAL STUDY OF CAREER MATURITY ATTITUDES IN A DEAF POPULATION

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NTID's principle goal in doing research is to influence the education, training and career placement of deaf citizens through systematic examination of issues related to deafness. As one part of NTID's total research effort, the Department of Research and Development conducts descriptive and experimental research. Research findings are used in the development of programs and materials in the areas of learning and instruction, personal and social growth, and career development of deaf students. This document was developed in the course of an agreement with the U.S. Department of Health, Education and Welfare.

A Longitudinal Study of Career Maturity Attitudes in a Deaf Population

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Abstract

This study evaluates the use of the Career Maturity Inventory-Attitude Scale with a deaf college population. The original form of the test and an adapted version were used with two groups of students who were tested three times during a two and one-half year period. Results of the study show that the adapted version of the CMI is more feasible than the original form for use with a deaf population. A high correlation was found between language ability and career mature attitudes A finding not anticipated was that students in the upper quartile changed their college majors more often than students in the lower quartile. Implications for use of the instrument are discussed.

A Longitudinal Study of Career Maturity Attitudes in a Deaf Population

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INTRODUCTION

Career development is a major concern to those involved in the advancement of deaf people and it is commonly recognized that a high proportion of deaf individuals are concentrated in occupations below their capabilities. National leaders have repeatedly urged professionals to find "new vistas" for competative employment for deaf people (Carney, 1972; Klein, 1970; Williams, 1972; Switzer, 1969). In response to the demand and the necessity for greater career opportunities, the Congress of the United States established the National Technical Institute for the Deaf (Public Law 89-36). The fundamental responsibility of this college is to provide the opportunity for post-secondary deaf students to prepare for and to pursue semi-professional and professional level educational programs that lead to successful employment in business, education, government and industry (Frisina, 1968). But opportunity alone is not sufficient. For people whose role in society has traditionally been limited, "new vistas" imply the development of tools and techniques to assist them.

Career counseling is one of the areas in which new tools and techniques are needed. Students entering the National Technical Institute for the Deaf (NTID) are often vague and uncertain about

careers, both as to selection and preparation and as to the options and responsibilities associated with eventual employment (Frisina, 1973). In the effort to meet these needs, Career Development Counselors of NTID have employed the Career Maturity Inventory (CMI) developed by John Crites (1973) as part of their testing repetoire. This paper reports the results of a three year longitudinal study of the CMI Attitude Scale and students who entered NTID during the summer of 1973.

REVIEW OF THE LITERATURE

The Concept of Career Maturity

During the past three decades, attention has been focused on the developmental characteristics of vocationalization. No longer is career choice viewed as a one time event that occurs during the late high school years. Instead, it is seen as a process which occurs over time, during childhood and adolescent years, from age ten to twenty-one (Crites, 1973a). Vocational development is now generally recognized as a part of the individual's development in much the same way as social, intellectual and emotional development are recognized.

Super first introduced the concept of vocational (career) maturity in the Career Pattern Study (Osipow, 1973). Career maturity was defined as a place reached on a continuum of vocational development from exploration to decline. The Career Pattern Study led to the first model of career maturity which

introduced five dimensions: (1) Orientation to Vocational Choice; (2) Information and Planning; (3) Consistency of Vocational Choice; (4) Crystallization of Traits; and (5) Wisdom of Vocational Preference (Super, 1974). An individual's vocational maturity was defined by his place along these five dimensions in relation either to chronological age or to the behavior of peers coping with the same developmental tasks. Osipow (1973) notes that several measures of career development were constructed out of Super's work including: (1) Readiness for Vocational Planning (Gribbons and Lohens, 1965); (2) Career Questionnaire (Super, Bohn, Jordaan, 1970); (3) Vocational Maturity Scale (Westbrook, 1970); and (4) Vocational Development Inventory (Crites, 1965).

The Career Maturity Inventory

Crites took the next step in the development of the career maturity model. He reclassified the factors of career development as: consistency, realism, choice attitudes, and choice competencies. He then focused on measuring the difficult categories of choice attitudes and competencies. The other dimensions were already measured satisfactorily in the Career Pattern Studies. To measure these two dimensions, Crites developed machine scorable, paper and pencil inventories now known as the CMI Attitudes and the CMI Competence Test. (Formerly Vocational Development Inventory)

The Attitude Scale which was used in this study is intended to measure subjective reactions, feelings and affect that an

individual has towards making a career choice and entering the world of work (Crites, 1973a). Fifty true-false items make up the Attitude Scale questionnaire which distribute along six dimensions: (1) Involvement in the Choice Process; (2) Orientation Towards Work; (3) Independence in Decision Making; (4) Preference for Career choice; (5) Conception of Choice Processes; and (6) Indecision in the Choice Process. The Attitude Scale is especially useful in studying career development, screening for career immaturity, assessing guidance needs, evaluating career education and testing in career counseling. (Crites, 1973b)

Career Maturity and Special Populations

With current approaches to career development being relatively new, little is known about the applicability of these theories and measurements to special populations. Traditionally, Americans have been committed to the idea of maximum development in each individual, but that ideal often becomes lost when focused on populations other than the majority. While studying current trends in sociology, psychology and education, Picou and Campbell (1975) noted the significant lack of information concerning the career behaviors of various minority groups. Crites (1973b) has used the CMI Attitude Scale with various minority groups and found those individuals to be less mature on career attitudes than the population on which the Scale was normed. Maynard (1970), in a study assessing the vocational maturity of inner-city youths, found similar results. Maynard suggested,

however, that the CMI Attitude Scale was impractical because the youths were not ingrained with middle class values regarding work and did not understand the expected occupational choice pattern.

What impact do hearing and language impairments have on occupational awareness, knowledge of self, decision making skills and attitudes of deaf people toward career choice and working? Lacy (1975) maintains that theoretically one can expect a developmental lag in career behaviors among deaf people. He suggests that lack of information input and output results in restricted life space. With fewer opportunities to observe and share in the work lives of parents and other adult role models, and with reduced opportunities for trying out work roles, young deaf people are not well prepared to make informed career decisions.

Empirical studies lend support to these contentions. For example, Lerman and Guilfoyle (1974) used the Vocational Maturity Index in a study of the early stages of vocational development in deaf adolescents. They found in their sample that vocational development was dependent upon language development and environmental stimulation. They also found significant differences between the measured career maturity of deaf and hearing adolescents, although career maturity did increase with age in both groups. Kersting (1975) using the CMI Competence Test in a study related to the present one, found that deaf college freshmen compared with their hearing peers show the greatest lag on the dimension of self-awareness, and that they were also below the

national norms for knowing about jobs, choosing a job, and career problem solving.

Revision of Standardized Tests

The literature of education of the deaf in America is replete with references to the reading-writing-speech handicaps resulting from prelingual deafness and its lack of normal verbal input through the sense of hearing. Since early in the 19th Century, teachers of the deaf (e.g., Jenkins, 1888, Crane, 1890) have been creating or adapting reading and other lesson materials to the high-interest, low-difficulty needs of deaf students. In a sense these efforts predate the movement of the 1940's and 1950's for specially written high-interest, low-difficulty recreational reading for less able readers in public schools (Golladay, 1951).

The Office of Demographic Studies at Gallaudet College (1972b) reported that the average deaf 16-year-old person has attained the reading skills of the average hearing fourth-grader. Fewer than 10% of the deaf population are said to read at or beyond a seventh-grade level, and at least one-third of deaf youth are termed functionally illiterate (Bolton, 1976). Moores (1967) has shown that standard reading tests give spuriously high estimates of the reading ability of deaf children. Wolfram and Fasold (1974) pointed out that to the degree a hearing student's nonstandard dialect is not represented in material, a reading obstacle is raised for him. To the extent that a deaf student's

English contains faults and limitations in structure, vocabulary, and grammatical correctness, it is clearly nonstandard.

Idiomatic language in many of the original CMI items made them nonstandard for deaf students. These items therefore represented a test of a student's English and reading skills as much as a test to elicit the career maturity information desired. The colloquial English in many original (Form A) CMI items, along with structural, idiomatic, and vocabulary difficulties, meant that the test administrators were frequently obliged to interrupt testing in order to explain unclear test items to students. To resolve this problem, a revised form (Form B) of the Attitude Scale was developed by the third author who has considerable experience in evaluating and editing materials for experiential appropriateness and readability for use by the hearing-impaired.

GENERAL RESEARCH OBJECTIVES

The purpose of this study then was to investigate the utility of using the CMI Attitude Scale with deaf college students. Toward this end the following questions were raised:

1. What effect does revising the test to reduce language problems (such as idioms, double-negatives, etc.) have on the responses of deaf students?
2. How do career choice attitudes (as measured by the CMI Attitude Scale) in a deaf population compare with the national (hearing) norms for the test?
3. Do scores on the CMI Attitude Scale increase over time?
4. Can scores on the CMI Attitude Scale be used to predict changes in academic major?

5. Can scores on the CMI Attitude Scale be used to predict grade point average?

6. Are CMI Attitude scores related to occupational objectives?

7. Do routinely gathered student background variables (reading level, school experience, work experience, age at onset of deafness, parental socio-economic status) account for significant variation in the CMI Attitude scores?

METHOD

Instrumentation

Form A in this study contained the original items of the published CMI Attitude Scale. This scale was reported by Crites (1973) to have a sixth grade reading level. Form B, the Attitude Scale as revised by the third author, was reviewed by the publishers of the CMI who indicated that they believed it would measure the same dimensions as the original scale. Both forms may be found in the appendix.

Questionnaires accompanied CMI re-tests and were used to solicit self-report data on student satisfaction with academic major; any change of major and reasons therefore; and future vocational expectations. Data on age at onset of deafness, previous school experiences, reading level, grade point average, work experience and parental socio-economic status were obtained from student records.

Examinee Population

The initial population for this study was composed of 149 students who entered NTID during the summer orientation program

of 1973. These students were randomly assigned to two groups. One group contained 74 students and completed Form A of the CMI Attitude Scale. The other group contained 75 students and completed Form B. Both forms were given under the same conditions using NTID counseling staff as test administrators and proctors.

Eight months later (Spring, 1974), students in this population were contacted through the counseling office. Eighty percent of the students (120) took the tests again and completed an accompanying questionnaire. Twenty-two months later (Winter, 1976) these students were again contacted. This time, forty-five students (30%) took the tests and responded to an accompanying questionnaire. A single sample comparison of means was conducted to check for sample bias. No significant difference (Z=0.83) was found between the sample of 45 and the original population of 149 from the initial testing date. The longitudinal results reported herein are generated from data gathered from the sample of 45.

FINDINGS

The first objective of this study was to examine the effects of revising the published version of the test. Table I shows the frequency and percent of correct responses made by students taking the original version (Form A) and the revised version (Form B) of the CMI Attitude Scale. One will notice that the range is approximately the same in both cases. However, the curve for the revised form is not skewed like the curve of the

original form. The mean for students taking Form A was 26.15 (52.29% correct) with a standard deviation of 5.10. The difference between these means is significant (Z=2.58) at the .01 level. Both the median and the mode also are higher for Form B. The internal reliability coefficients (Kuder-Richardson Formula 20) for Forms A and B were .65 and .67 respectively. Both coefficients are within the range reported by Critcs (1973). On the basis of these findings and the fact that both instructors and students reported fewer difficulties in the test taking situation, it is recommended that Form B be used when using the CMI Attitude Scale with a hearing-impaired population.

(Insert Table I)

The second objective of the study was to compare the career choice attitudes (as measured by the CMI) of deaf students with the national (normal-hearing) norms. Table II presents the cumulative percentage olgives for deaf students in this study and for hearing students in grades 5-12 who participated in the study which generated the national norms. The sample of deaf students in this study clearly fall between the fifth and sixth grades on the chart.[1]

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[1]The switch between the 10th and 11th grade curves is an anomaly which theoretically should not occur. However, its presence is noted and discussed by Crites (1973a) and does not directly effect this study.

(Insert Table II)

Given this low starting point for post-secondary students there was concern as to whether or not these students' CMI scores would improve over time. Crites (1973b) indicates that scores should improve as a function of age. The basis of his expectation can be seen in the progression of scores from grade level five to grade level twelve in Table II. The sample of 45 students from the initial population were retested over a two and one-half year time span. The mean total scores of this group from the initial testing was 26.04 (sd = 4.65). Thirty months later their mean total score was 28.91 (sd = 5.46). The difference between these correlated means was significant at the .01 level (t = 4.71). Programmatically, however, the investigators are unsure about how much weight should be attached to this improvement. These students have essentially moved from between the 5th and 6th grade levels to between the 6th and 7th grade levels on the national norms.

The next objective was to evaluate the Attitude Scale as a screening tool for career immaturity by studying the relationship between CMI scores and career allied variables such as grade point average (GPA), changes in academic major and future job expectations. Examination of GPA and total CMI scores over a two year period showed practically no relationship (r = .16). In terms of change of major and job expectations, however, the CMI Attitude Scale did reveal some long range predictive utility.

At the end of the first year there were no significant differences between students who scored in the highest and the lowest quartiles on the CMI Attitude Scale in terms of either variable. Relatively few students (19%) changed their major during the first year. Seventy percent of the students had some idea about their future occupation, nineteen percent were able to give a specific job title, and eleven percent reported no idea as to what they would be doing after they left school.

But at the end of two and one-half years, there were significant differences between students in the highest and lowest quartiles on the Attitude Scale. Seventy percent of the upper quartile students had changed their major at least once during the period of the study as opposed to only nineteen percent of those in the lower quartile (probability = .013). Furthermore, all of the upper quartile students who had had some idea about job expectations at the end of the first year were now able to give a specific job title. In contrast, while 40% of the lower quartile students moved in this direction, an equal number of those who had had some idea a year earlier now reported that they had no idea about their future jobs (probability = .023). Thus while the upper quartile students were more likely to change their major over two and one-half years, they also were more likely to decide on a specific vocational objective in that time period than were the students who scored in the lowest quartile. Finding that students with higher scores changed their major more

often than those with the lowest scores was not anticipated and will be discussed later.

The final objective of this project was to determine whether or not routinely gathered student background variables accounted for significant amounts of variation in CMI scores. These variables included entry reading level, the type of high school graduated from (residential, day, public, special program), previous work experience, age at the onset of deafness, and parental socio-economic status. Of these five variables only entry reading level was significant.

The reading level of the entering students in this population was measured via the Comparative Guidance and Placement Program (CGPP) Reading and Sentence subtests. Students were subsequently divided into categories in accordance with the NTID Communications Profile (Crandall, 1975). Students in reading profile categories I, II and III had an average CMI score of about 25. These students fell below the 15th percentile in reading when compared with normal-hearing students entering two-year college programs. Hearing-impaired students in categories IV and V were above the 16th percentile on the CGPP and attained a mean score of 31.56 on the CMI Attitude Scale. This was significantly better ($F = 8.18$, p .001) than the mean scores of the students in categories I-III.

In short, the findings suggest that altering the test to eliminate obvious language problems for hearing-impaired subjects

improved test performances. Test alteration, however, was not enough to change the functional interpretation of the results in this investigation. Students entered between the 5th and 6th grade level and improved one grade level during the period of study. Further, it was found that the CMI Attitude Scale did not yield short term prediction for grade point average, changes of academic major or job expectations. However, a significant difference was uncovered between the highest and the lowest quartile subjects over two and one-half years. At the end of the study, students in the highest quartile were more likely both to change their major and to clearly specify their future job expectations than were students in the lowest quartile. Finally, entry reading level was discovered to account for a significant amount of variation in CMI scores. Four other student background variables were not significant.

DISCUSSION

The fundamental reason for doing this study was to investigate the utility of using the CMI Attitude Scale with deaf college students. Counselors wanted to know whether or not the test was useful in screening the students who were most in need of career guidance. Although it was recognized that not everyone who remained within their initial academic major would be career mature, the prevailing notion among counselors was that students with low scores on the test would change their majors more often than students with high scores on the test. The assumption was that

students who changed their major were the least adequately prepared to make a choice originally, and therefore would benefit from a career guidance program.

This notion was not supported in the study. Students who scored in the upper quartile of the CMI Attitude Scale were more likely to change their major than students who scored in the lowest quartile. One explanation for this might be that the students who scored high on the test also had better reading skills and therefore may have had a greater number of educational options. Another possible explanation is that the CMI Attitude Scale was designed to measure only one of four dimensions in Crites' model of career maturity. It does not consider Career Choice Consistency, Realism or Competency. In any case, the Attitude Scale alone did not yield information sufficient to identify students with the greatest need for career counseling.

The significant difference in scores between students who took the published version of this test and those who took the revised version point out the merit in revising certain types of standardized tests for use with a hearing-impaired population. The standard version had a reported reading level of 6th grade (Crites, 1973a). But the items still contained colloquial expressions and had a number of structural and vocabulary difficulties. The revised version removed many of these problems and was easier to administer because there were fewer questions raised concerning unclear items. If future research supports the

publishers' feeling that both versions measure the same constructs and Form B is valid for both hearing and hearing-impaired populations, the result would be a test with more universal application.

Other findings in this report were similar to the results of previous studies. Low correlations between GPA and CMI Attitude scores have also been noted in hearing populations (Crites, 1973a). The same was true for the absence of a relationship between the CMI scores and socio-economic status (Super, 1974). The high correlation between reading ability and CMI scores stresses the importance of having adequate language abilities with which to assimilate information. Lerman and Guilfoyle (1974) in their studies of vocational maturity in deaf adolescents found that vocational information and planning were related to language competencies.

This study also shows a career development lag between a hearing-impaired population and the national (hearing) sample. Other minority groups who have been part of CMI studies also have norms below the national sample. CMI Attitude Scale reflects white, middle-class values and questions have been raised (Moracco, 1974; Smith, 1976; Maynard, 1970) about its use with minority groups. Nevertheless, young hearing-impaired adults who are in the career choice process are for the most part preparing themselves to work and live a life style associated with middle class values.

SUMMARY

The results of the study show that the CMI Attitude Scale can not be expected to screen out students who are unprepared to make wise career choices. It should be remembered that the test was not designed to measure all of the dimensions of career development. It can, however, be used as a counseling tool in a one-to-one situation and also give information on group responses to various aspects of career choice attitudes which can be helpful in program planning.

The language revised version (Form B) proved to be more suitable for use with a hearing-impaired population. A significant relationship was also found to exist between reading ability and scores on the CMI. Variables such as socio-economic status, type of high school graduated from, GPA in college, and previous work experience were not significantly related to career maturity as measured by the CMI Attitude Scale. A developmental lag was noted between hearing and deaf populations.

In order to impact on the problem of underemployment with the deaf, more must be learned about the career development process among deaf people and programs must be designed to impact upon that developmental process so that the potential of deaf individuals can be fully utilized.

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TABLE 1

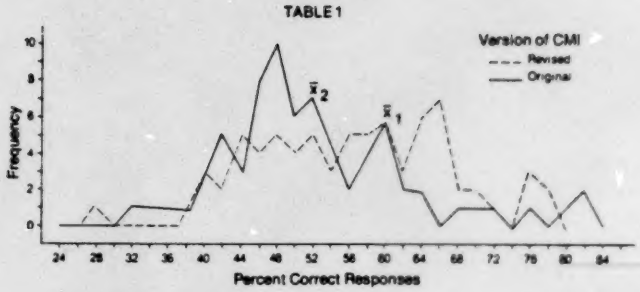
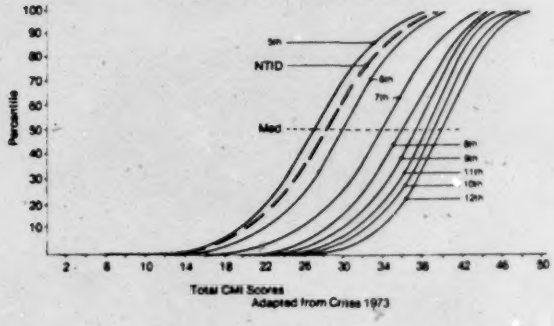


TABLE II

CMI ATTITUDE SCALE
GRADES 5 - 12

Cumulative Percentage Ogives



Adapted from Criss 1973